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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

ZHE, MENG YAO

ART UNIT

PAPER NUMBER

2195

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DELIVERY MODE

05/26/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/716,695

Applicant(s)

MOUNTAIN ET AL.

Examiner

MENGYAO ZHE

Art Unit

2195

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 February 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8, 11-13, 30-35, 37-48 and 51-53 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 11-13, 30-35, 37-48, 51-53 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. Claims 1-8, 11-13, 30-35, 37-48, 51-53 are presented for examination.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-8, 11-13, 30-35, 37-48, 51-53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lektion et al., Pub No. 2005/009165 (hereafter Lektion) in view of Flynn, Patent No. 6,256,775 (hereafter Flynn).
4. Lektion was cited in the previous office action.
5. As per claims 1, 31, 41, Lektion teaches a method comprising:

Determining, by a computing device, the configuration of a system of resources
(Para 10);

Determining, by the computing device, the processing requirements of an
application running on the system
of resources (Para 31, 32);

Analyzing, by the computing device, the determined configuration and requirements in order to attempt to optimize the performance of the application (Para 36);

Generating, by the computing device, optimization suggestions from the analysis (Para 41);

dynamically causing, by the computing device, applying of the optimization suggestions (Para 41),

a static application characterization database storing information regarding fixed characteristics of the application (Para 22).

Lecture does not specifically teach a dynamic application characterization database storing information regarding mutable characteristic of the application, wherein the dynamic application characterization database is empty at initialization of the application characterization database and is gradually established as the application is executed.

However, Flynn teaches a dynamic application characterization database storing information regarding mutable characteristic of the application, wherein the dynamic application characterization database is empty at initialization of the application characterization database and is gradually established as the application is executed (Column 10, lines 19-49: it is inherent that the record is gradually established since the event cannot be recorded unless the application starts running) for the purpose of monitoring application execution.

It would have been obvious to one having ordinary skill in the art at the time of the applicant's invention to modify the teachings of Lektion with a dynamic application characterization database storing information regarding mutable characteristics of the application, wherein the dynamic application characterization database is empty at initialization of the application characterization database and is gradually established as the application is executed, as taught by Flynn, because it allows one to monitor the application execution.

6. As per claims 2, 42, Lektion teaches wherein dynamically applying the optimization suggestions includes: dynamically allocating resources to the execution of and interaction with the application; dynamically utilizing acceleration tools (Para 41).

7. As per claims 3, 33, 43, Lektion teaches wherein dynamically utilizing acceleration tools includes utilizing tools selected from a group including: primitive performance libraries (Para 35); managed runtime optimization settings (Para 38); reordering portions of application execution (Para 31).

8. As per claims 4, 44, Lektion teaches wherein determining the configuration of a system of resources includes utilizing a device and environment characterization database (Para 36).

9. As per claims 5, 45, Lektion teaches wherein the device database includes information regarding the types of resources in the system of resources and information regarding the physical capabilities of these resources (Fig 3, units 45, 47; Para 29).

10. As per claims 6, 34, 46, Lektion teaches wherein the environment database includes information regarding the configuration, substantially current status, and substantially current capacity of the resources within the system of resources (Para 32).

11. As per claim 32, Lektion teaches predicting application performance after applying the suggested optimizations (Para 41);
monitoring the actual application performance to generate empirical data (Para 39);
comparing the actual application performance to the predicted performance (Para 39);
performing the method of claim 1, and utilizing the empirical data when analyzing the determined configuration and requirements in order to attempt to optimize the performance of the application (Para 36).

12. As per claim 30, Lektion teaches a system comprising:

a distributed application (Para 31);

a system of resources capable of executing the distributed application (Fig 3; Para 31);

a Content & Context Sensitive Accelerator capable of attempting to optimize the performance of the distributed application (Para 34);

a Device & Environment Database capable of providing information to the Content & Context Sensitive Accelerator about the system of resources (Fig 2, unit 16);

an Application Characterization Database capable of providing information to the Content & Context Sensitive Accelerator about the distributed application (Para 36); unmanaged system software capable of utilizing and the system of resources (Para 31).

13. As per claims 7, 47, Lektion does not specifically teach wherein device and environment characterization database is incrementally generated as each of the resources of the system of resources is powered-on.

However, it would have been obvious to one having ordinary skill in the art of resource tracking to update the database tracking resource records only when the resource is powered on, since otherwise, the powered off resource will have no way of contacting the system and therefore the system can not know the existence of these powered off resources.

14. As per claims 8, 35, 39, 40, 48, Lektion teaches wherein the device and environment characterization database is dynamically generated utilizing a service including determining availability of resources (Para 32).

Lektion does not specifically teach collecting data from sensors coupled with the resources; analyzing the data collected; inferring an execution context characterization; estimating the capacity of each resource; and updating the device and environment characterization database.

However, in order to determine the availability of resources, it would have been obvious to one having ordinary skill in the art of resource detection to follow the steps of collecting data from sensors coupled with the resources; analyzing the data collected; inferring an execution context characterization; estimating the capacity of each resource; and updating the device and environment characterization database, since these steps are essential to any methods involving resource calculations.

15. As per claims 11, 37, 51, Lektion does not specifically teach wherein the static application characterization database is generated utilizing:

determining, by the application's compile time, the data types utilized by the application; determining, by the application's compile time, the frequency of the usage of the data types; determining, by the application's compile time, the resource required by the application; updating the static application characterization database with the determined information.

However, since program analysis and optimization including steps mentioned above are commonly performed at the time of the program's compilation, it would have been obvious to one having ordinary skill in the art to have the steps above be done at compile time for the purpose of making sure that the application will have all its needs met before it is sent out to be executed.

16. As per claims 12, 38, 52, Lektion teaches wherein the dynamic application characterization database is generated utilizing:

reading the static application characterization database (Para 36);
collecting runtime application data usage (Para 39)
analyzing application usage and identifying resource usage bottlenecks (Para 43);
updating the dynamic application characterization database (Para 39).

17. As per claims 13, 53, Lektion teaches predicting application performance after applying the suggested optimizations (Para 41);
monitoring the actual application performance to generate empirical data (Para 39);
comparing the actual application performance to the predicted performance (Para 39);
performing the method of claim 1, and utilizing the empirical data when
analyzing the determined configuration and requirements in order to attempt to optimize the performance of the application (Para 36).

Response to Arguments

18. Applicant's arguments with respect to claims 1-8, 11-13, 30-35, 37-48, 51-53 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

19. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MENGYAO ZHE whose telephone number is (571)272-6946. The examiner can normally be reached on Monday Through Friday, 7:30 - 5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on 571-272-3756. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/VAN H NGUYEN/
Primary Examiner, Art Unit 2194